Raptor "Race 1.5" Upper Control Arm Kit

Installation Guide

Rev 1B

Sales: 866-691-7750 ext 1

Tech Support: 866-691-7750 ext 2

23231 Vista Grande

Laguna Hills, CA 92653

Install Videos: YouTube "Raptor Performance Group"

COMPLETELY READ INSTALLATION INSTRUCTIONS PRIOR TO INSTALLING PRODUCT and WATCHING VIDEOS

WARNING: Failure to follow these instructions may lead to serious personal injury and/or property damage.

Prepared by: Engineering Innovations INC for Raptor Performance Group

Engineering Innovations INC DBA

RPG - Raptor Performance Group

Table Of Contents

1. General Information

The Kit is designed with the utmost consideration for safety, quality and ease of installation. The kit comes complete with all necessary hardware and fasteners. However, it is assumed that the installer has advanced/professional skills automotive vehicle servicing. It is recommended that installer obtain an OEM service manual for the vehicle.

1.1 Installation Information

The information contained in this Installation Guide is intended for use by technicians of advanced to professional skill levels. Attempting installation without the proper training, tools and equipment could cause injury to you or others. It could also damage the vehicle or cause an unsafe condition.

1.2 For Your Safety

Because this guide in intended for technicians of advanced to professional skill levels, we do not provide warnings about many basic shop safety practices. If you have not received shop safety training or do not feel confident about your knowledge of safety practices, we recommend that you do not attempt to perform the procedures described in this guide. Some of the most important general safety precautions are given below. Engineering Innovations cannot warn you of every conceivable hazard that can arise. Only you can decide whether or not you should perform a given task.

1.3 Important Safety Precautions

Make sure you have a clear understanding of all basic shop safety practices and that you wear appropriate clothing and use safety equipment. Be especially careful of the following:

- Read all directions before you begin, and make sure you have the tools, the parts and the skills required to perform the tasks safely and completely.
- Protect your eyes by using proper safety glasses, goggles or face shields anytime you hammer, drill, grind, pry or work around pressurized air or liquids, and springs or other stored-energy components.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts.
- Protect yourself and others when you have a vehicle up in the air. Anytime you lift a vehicle, either by hoist or a jack, make sure that it is securely supported.

Make sure the engine is turned off and battery disconnected before you begin work.

- Carbon Monoxide poisoning from exhaust gases: Be sure there is adequate ventilation whenever you run the engine.
- Burns from hot parts: Let the engine and exhaust system cool before working on those areas.
- Injury from moving parts: If running the engine, keep hands, fingers and clothing away from moving/rotating parts.

Gasoline vapor and hydrogen gases from batteries are explosive. To reduce the possibility of fire or explosion, be careful when working near gasoline and batteries.

Use only nonflammable solvent, not gasoline, to clean parts.

Never drain or store gasoline in an open container.

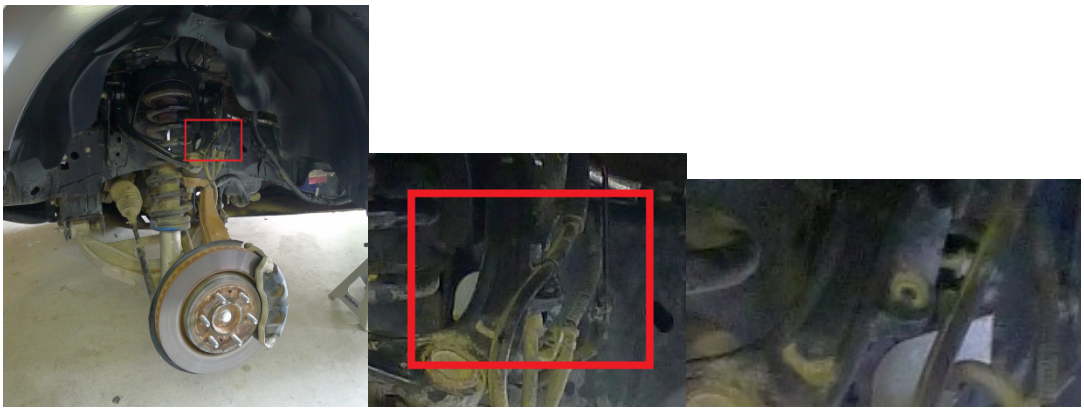
Keep all cigarettes, sparks or flame away from the battery and all fuel related parts.

2.0 Removal of Original Parts

See OEM manual for detailed instructions. Items to be retained for re-installation are noted.

- Wheels and Tires (to be re-installed)
- To Simplify, perform this on the driver's side first
- Turn the steering wheel all the way to the Left
- Remove Brake Line ATTACHMENT BOLTS on Chassis and Knuckle. Performed only as a safety precautionary.. not Necessary
- Remove ABS and 4x4 Vacuum Line attachment bolts. Performed only as a safety precautionary.. not Necessary

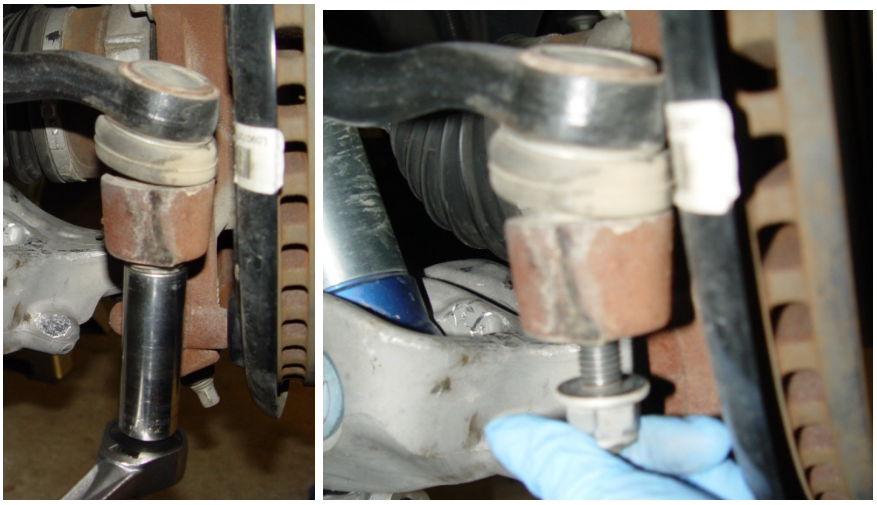
- Vacuum line attached to the upper control arm. Cut the ZIP TIE. Be Careful to not cut the Vacuum Hose.



- Tie-Rod

Option 1 OE Tie Rods

- Loosen Tie-Rod Nut 21mm or 13/16" Socket. Do not remove completely.



To Loosen, Tap on Knuckle and bottom of ball joint with Hammer

Option 2: RPG Tie Rods

- Remove inner Tie Rod Boot Clamps and pull back the Boot.

- Remove the 5/8" Inner Rod End Bolt and swing the tie rod out of the way.
- DO NOT TOUCH THE OUTER TIE ROD NUTS/PIN

Stock Upper Control Arm to knuckle ball joint. Remove this using the same method as the OE stock Tie Rod.

Stock Shock removal.

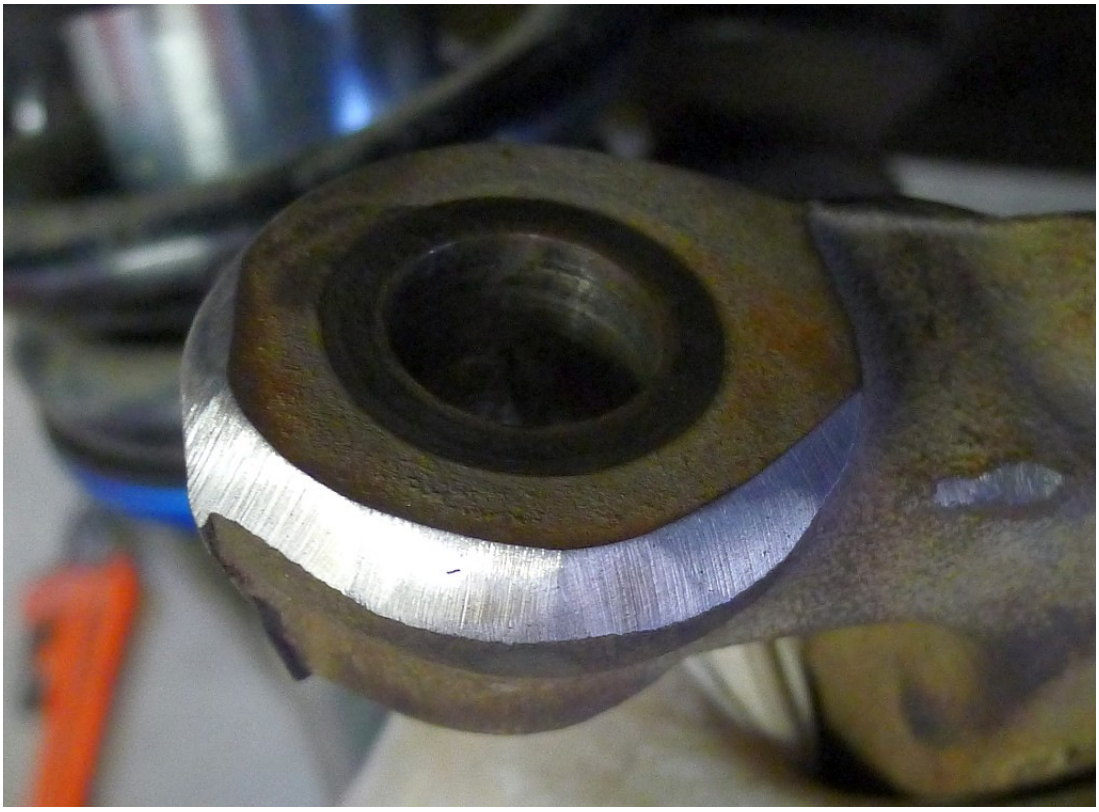
- loosen the lower shock nut (30mm) while holding the bolt (28mm or 1 1/16"). Note this bolt and nut are very tight from Ford. 406 Ft-lbs.

- on the top of the stock shock, mark the tapered wedges with a white marker or white out to help simplify the orientation upon installation of the stock Fox shocks. (these will not be reused with the Fox 3.0" shocks)

- loosen the upper nuts (15mm or 5/8) I have found that this is easier when opening the hood of the truck and using a long extension with a 5/8" swivel spark plug socket.

Remove the stock upper control arm to chassis bolts. REMEMBER THE BOLT ORIENTATION Very important otherwise the coil spring will collide with the bolts. (Bolts / Nuts are to be reused) 13/16 or 21mm

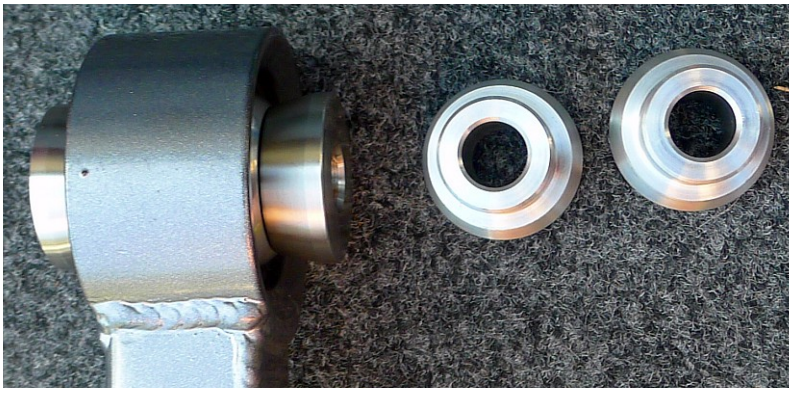
Using a sanding disc in a Makita hand held angle grinder or such, fabricate a 1/4" Chamfer around top of Knuckle for Spherical Bearing Cup clearance. This operation has zero effect on the strength or integrity of the Knuckle.



3.0 Installation of Kit

3.1 Install upper Control Arm

- Install mis-alignments into control arms as shown



- apply a thin film of lubricant while the inner bearing are easy to get to.

- apply RED thread locking compound to stock chassis side bolts. Remember the bolt orientation.

- torque to Factory specification of 111 Foot Lbs

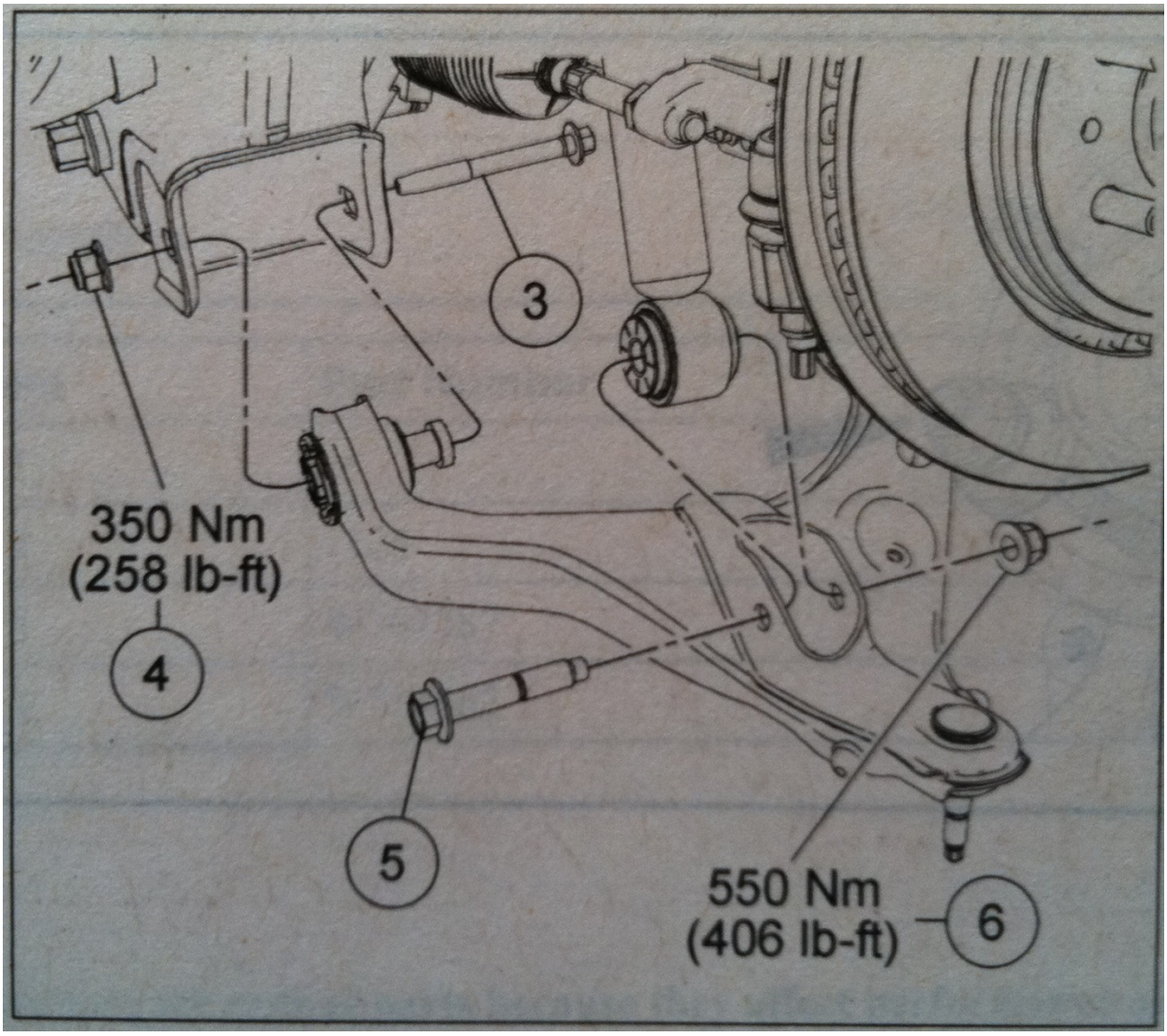
3.2 Install Shock

Chassis to Coil Bucket Tapered Wedges

- are reused with the Stock Fox Shock. The top wedge has the thick end facing the outside of the truck, while the bottom wedge has the thin end facing the outside of the truck. But don't worry about getting the orientation correct. Ford has designed it such that they will only go in one direction / orientation.

- are NOT reused with the Fox 3.0" Shock. :)

LCA to Shock Bolt torque to 406 FOOT Pounds... yes that is correct. 406



3.3 Attach Tie Rods

Option 1 OE Tie Rods. Attach the outer tie rod to the knuckle and torque the nut down to 85 Foot Pounds. (13/16" or 21mm)

Option 2 RPG Tie Rods.

- Attach the inner rod-end to the clevis and torque the 5/8" bolt to 100 Foot Pounds (15/16" Socket and Wrench)

- Attach the inner tie rod boot to the steering box. Reuse or replace clamp

3.4 Install UCA Pin into Knuckle.

- Drill out the bottom of the taper to 5/8" so that the pin can go through the tapered hole

- Clean all grease off 300M pin and the inside of the taper of knuckle to ensure a good friction fitment.

- Do not use a thread locking compound.

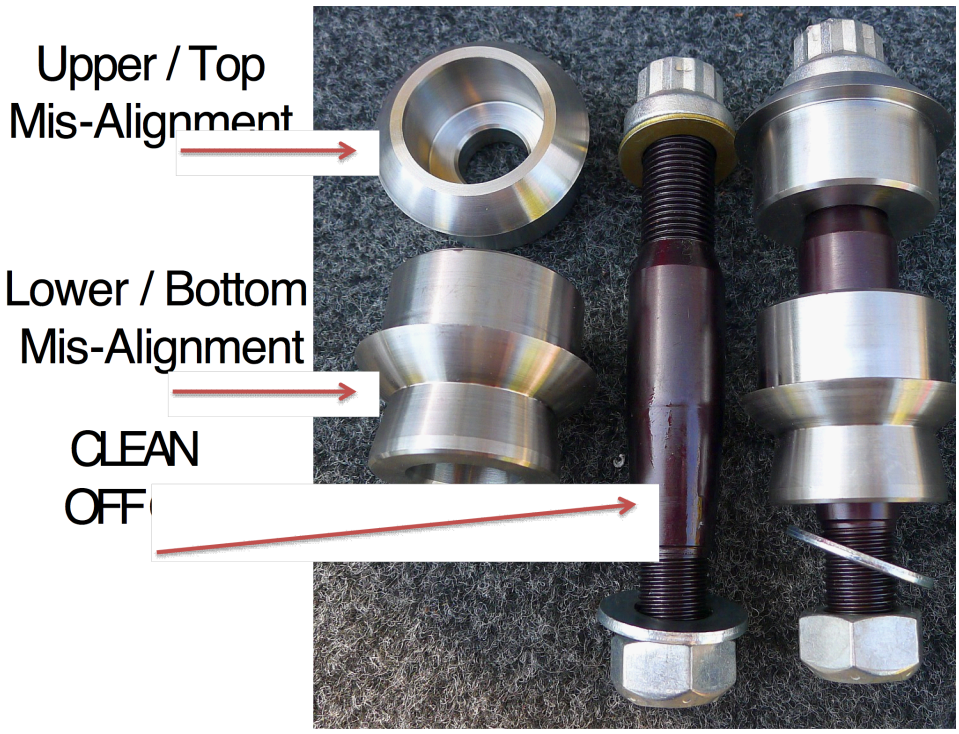
- Install 5/8" washer

- Temporarily use the 5/8-18 UNF Grade 8 nut to seat the taper between the Pin and Knuckle. Torque to 100 Foot Pounds.

- Remove the temporary nut and install the 5/8 Thread locking nut. Do not use a thread locking compound. When tightening apply gradual pressure onto the wrench. Failure to do so, may cause the tapered pin to release. If the pin does come loose, remove the pin and start step 3.4 all over. Torque to 100 Foot Pounds.

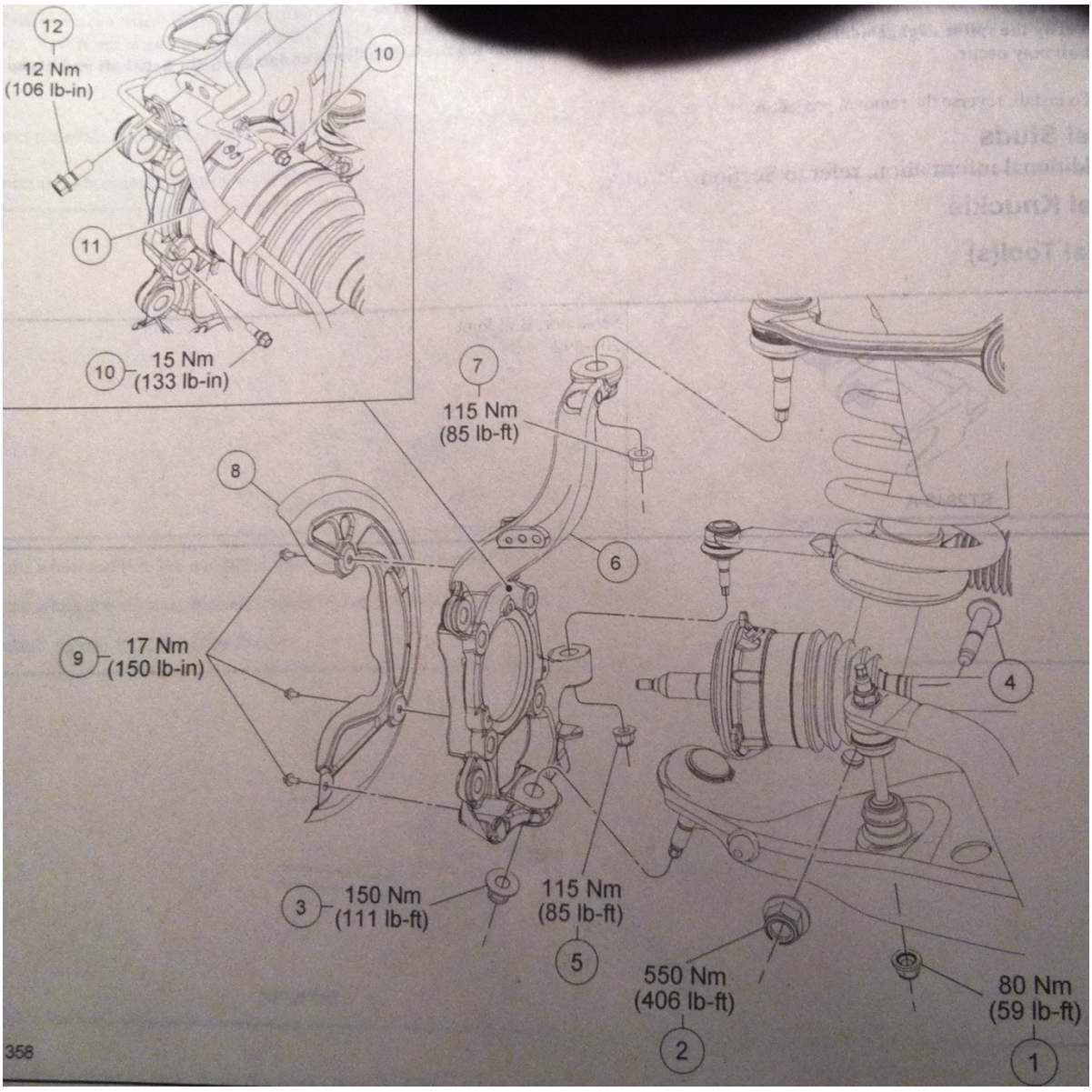
3.5 Attach UCA onto Knuckle Pin

- Install mis-alignment spacers into UCA. The small mis-alignment goes on the top. Large mis-alignment goes on the bottom.



- Guide the upper control arm with mis-alignment spacers down onto the 300m Knuckle pin. Be Careful to not drop the mis-alignments and damage the thin edges. If you do, file them smooth appropriately otherwise premature damage to the Teflon liner will occur. Torque down 5/8" 12 pint Nut to 80 Foot Pounds (3/4" 12 point socket). Do not exceed this torque otherwise you may pull the knuckle pin out of the knuckle causing the tapers to come loose.

3.6 Attach Brake, ABS and Vacuum Lines



3.7 Perform the same operation to the Passenger's Side

3.8 Install wheels and tires

Torque to Factory Specification of 150 Foot-Pounds.

4.0 Inspection of complete installation.

5.0 Maintenance

- Lubricate rod ends with DuPont Teflon Non-Stick Dry-Film Lubricant available at Lowes 4oz. for $5 Lowes Item# 363776

Re-torque complete installation post - 100 - 500 miles of driving

- as per manufactures recommendations